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SOURCE Sovetskaya Kniga, No 5.BOOK REVIEW ON MACHINING AIRCRAFT ENGINE PARTS

The following is a resume of a book review, written by I. Ya. Li-
 khobabenko and Yu. V. Kalganov, on Tekhnologiya Mekhanicheskoy Oba-
 botki Detaley Aviadvigateley (The Technology of Machining Parts for
 Aircraft Engines) by F. T. Blinov and V. P. Firago, Moscow, Oboron-
 giz, 1951.

Special Soviet technical books must instruct the youth in the latest
 achievements in science and techniques. The book being reviewed does not meet
 this requirement.

For example, the paragraph on heat treatment of parts and its place in
 the technological process is poorly composed and briefly written. Heat treat-
 ment is one of the most important technological processes in the manufacture of
 parts for aircraft engines.

In discussing the problems of distortion and buckling of parts during heat
 treatment, the authors of the book specify that the use of high-frequency cur-
 rents and cold processing considerably lowers the occurrence of distortion.
 However, they do not explain for what types of parts or under what conditions
 such types of heat treatment can be used.

In the chapter on thread cutting, the authors of the book describe in de-
 tail obsolete methods of thread cutting, but devote very little attention to
 advanced methods, such as thread rolling and high-speed thread cutting.

Self-releasing chucks have not been described. Designs of taps have not
 been given, and the peculiarities of cutting threads in aluminum and heat-re-
 sistant materials have not been covered.

Obsolete designs of threading-die heads with radial chasers have been
 shown but heads with rolled threaded dies were not included.

The authors of the book have described gear processing methods which are
 not used at plants of the aircraft industry.

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The authors have frequently used terminology at variance with accepted usage. In some cases, incorrect terminology has been used. For example, they have incorrectly called the electric-spark method of metalworking the electrodynamic method. In addition, they have erroneously asserted that kerosene is usually used as the working liquid in electric-spark processing whereas, in fact, mineral oil is used for this purpose.

Electric spark hardening of cutting tools was not even mentioned.

In addition to errors made in the chapter on machining turbine blades, the authors showed the backs of blades being machined on a universal lathe with a primitive contouring device. They did not show the special high-production machine tools such as the Model MK-54 semiautomatic lathe, the KIII-65 ^{III} are Roman numerals/ grinding machine, etc. which have been manufactured by the Soviet machine tool building industry.

The book recommends methods of production which have not yet been adopted by series-producing plants; in particular, the processing of compressor blades from stamped blanks. Nothing was said about machining the feathers and edges of compressor blades. In general, the production of compressor blades has not been given sufficient attention. The compressor blade is shown with a fir-tree root, which is not being used at the present time.

In view of the fact that compressor blades are not manufactured by casting, it is incorrect to say that "the manufacture of precision dies and castings made of aluminum alloys does not involve any great difficulties. Blanks for compressor blades and guide apparatus are obtained by these methods."

No mention has been made concerning the application, at plants, of dynamic balancing of impellers.

The authors have not elucidated the problems concerning the manufacture of separable crankshafts for air-cooled radial engines. There are certain operations in machining crankshafts for radial engines, which are not required in machining shafts of in-line engines. Among these operations are the machining of splines, cutting of threads, and assembling of separate parts into a unit.

Unless the book is radically revised, it cannot be recommended as a manual for engine-building technicians.

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